

***DOLERUS ANATOLII*, N. SP., THE FIRST PALEARCTIC MEMBER OF THE
SUBGENUS *NEODOLERUS* GOULET (HYMENOPTERA: TENTHREDINIDAE)**

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Abstract.—A new tenthredinid, *Dolerus (Neodolerus) anatolii* Heidemaa and Zinovjev, n. sp., is described from the Russian Far East and South Korea. It is the first species of the subgenus *Neodolerus* Goulet from outside the Nearctic Region. The subgenus now includes eleven Nearctic and one Palearctic species. Shared characters between *Neodolerus* species and the Palearctic *Dolerus (Poodolerus) vulneratus* Mocsáry are discussed.

Key Words: *Dolerus vulneratus*, *Dolerus shanghaiensis*, geographic distribution, Holarctic, Hymenoptera, *Neodolerus*, new species, *Poodolerus*, sawfly, taxonomy, Tenthredinidae, zoogeography

Neodolerus Goulet, 1986 (type species *Dolerus sericeus* Say, 1824), a subgenus of the Holarctic genus *Dolerus* Panzer, 1801, has been known from 11 Nearctic species. Together with the *nitens* group, which corresponds to *Poodolerus* Zhelochovtsev, 1988, it is regarded as an early lineage of *Dolerus* by Goulet (1986). Both are characterized by a shared apomorphic character, the relatively long sternum 9 in males (short in Selandriinae). *Neodolerus* is defined by the following synapomorphies: a deeply outlined furrow on the outer surface of the metatibia, a large flat surface at the posterior angle of the median lobe (small in other Selandriinae), and the markedly raised posteromedial surface of tergum 8 in the males.

Here, we describe a new species of *Neodolerus* from the Russian Far East and South Korea. It does not fit any *Dolerus* species known from the Palearctic (Zhelochovtsev 1928, 1935; Malaise 1931; Muche

1965; Haris 1996; Wei 1997; Wei and Nie 1997; Haris 2000, 2001), and it is not one of the Nearctic species treated by Goulet (1986). The species is named after the outstanding Russian symphytologist, Anatolii Nikolaevich Zhelochovtsev (1903–1976), who was the first to recognize it as a new species but never named or published on it.

MATERIAL AND METHODS

The description of new species is based on 3 female specimens, 2 collected in the Russian Far East and 1 in South Korea. The morphological terminology follows Goulet (1986) and Viitasaari (2002). The right half of valvula 1 (lancet) of the holotype and the left half of one paratype were dissected, processed in 10% KOH, and mounted in Canada balsam (holotype) and euparal (paratype) between rectangular cover slides. They were then placed in paper frames and pinned with the corresponding specimen. Measurements were made on all three spec-

Судзуч. Зап.
Та-Чингоча 24-27 VI
А. Шаров 948

[Sudzuch. Zap. = Lazovsky Reservation]
[Ta-Chingou-za Bay = Proselochnaya Bay]
[24.-27.06.1948 A. Sharov leg.]

Dol. n. sp.
pr. taeniatus

Dol. n. sp.
pr. [prope = near] *taeniatus*

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Fig. 1. *Dolerus anatolii*, holotype female. Labels 1 & 2.

imens. The upper and lower limit for each measurement is given in the description. The line drawings of valvula 1 are from digital micrographs taken with an Olympus BX50 System Microscope and Olympus DP11 Camera. Other illustrations are from micrographs taken with an Olympus stereomicroscope SZX9 and digital camera C-4040ZOOM.

***Dolerus (Neodolerus) anatolii* Heidemaa
and Zinovjev, new species**

(Figs. 1–10)

Type material.—*Holotype*: female in coll. A. N. Zhelochovtsev, Zoological Museum of Moscow State University (Russia); with three labels (labels 1 & 2 in Fig. 1.): [Sudzuch. Zap. = Judzuche Zapovednik, now the Lazovsky Reservation, Ta-Chingou-za (= Ta-Chingou-za Bay, now Proselochnaya Bay, approximately in the middle between Valentin 44.12N; 134.30E and Preobrazheniye 42.90N; 133.91E), 24–27.06.1948, A. Sharov leg. (pale label, partially printed, partially handwritten, in cyrillic)], “Dol. n. sp. [LB = line break] pr

[= prope] *taeniatus*” [in pencil, authentic handwriting of A. N. Zhelochovtsev]; “HOLOTYPUS ♀ DOLERUS ANATOLII HEIDEMAA & ZINOVJEV 2003” [red handwritten label]. Flagellomeres 5–7 of the right antenna are missing, the remaining flagellomeres of both antennae are glued on a piece of paper placed on the same pin as the specimen. The preparation of the right half of valvula 1 bears the handwritten code: “Dol. sp. 6493-3,” and is pinned with the specimen. PARATYPES (2 ♀): 1 ♀ with two labels “RUSSIA: Primorskiy kray [LB] Sikhote-Alin Biol. Station [LB] 30 km SE Chuguevka [LB] 44.05 N 134.12 E [LB] 31.V.1983 650 m [LB] leg. A.TAEGER” [white printed label]; “PARATYPUS ♀ DOLERUS ANATOLII HEIDEMAA & ZINOVJEV 2003” [red handwritten label]. The preparation of the left half of valvula 1 is pinned with the specimen. Deposited in the Deutsches Entomologisches Institut, Eberswalde, Germany; 1 ♀ with two labels: “Mirugam (Pugdaesa) [128.57 E; 37.80 N] [LB] 1300m Mt. Odaesan [LB] Kangwondo. Korea [LB] 28.V.1991 [LB] A. Shinohara” [white printed label, the date partially handwritten]; “PARATYPUS ♀ DOLERUS ANATOLII HEIDEMAA & ZINOVJEV 2003” [red handwritten label]. The left flagellum, midtibia, and midtarsus are missing. Deposited in the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo, Japan.

Female.—Body black. Wings hyaline, slightly infuscated towards apices. Abdomen and legs of holotype somewhat brownish, probably due to storage conditions of specimen. Body length 9.6–10.2 mm. Distance from distal margin of tegula to pterostigma 5.0–5.55 mm.

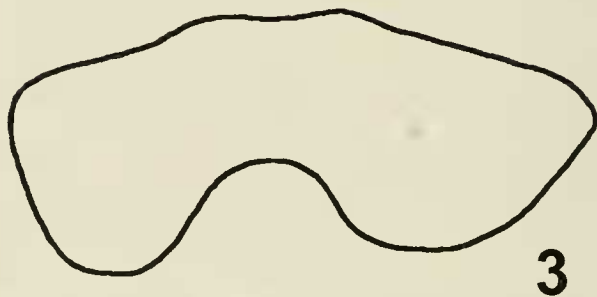
Head: Width at level of compound eyes 2.35–2.52 mm, maximum width behind eyes 2.26–2.41 mm (measured in dorsal view). Head behind eyes subparallel in dorsal view (Fig. 2). Length of head behind compound eye about 0.4× (25/60) of length of eye in dorsal view (head positioned so hind margins of lateral ocelli and com-

pond eyes aligned). Setae from silvery to brownish silvery and from brownish silvery to brownish on labrum and mandible. Longest setae on postocellar area shorter than diameter of middle ocellus, on frons in front of middle ocellus setae about as long as ocellus diameter. Setae on paraantennal field up to 0.11 mm long. Antennal setae blackish, on scape up to 0.11 mm long. Length of antennal segments measured in mm: scape (with radicula) 0.49–0.50; pedicel 0.27–0.32; flagellomere 1—0.83–0.95, 2—0.69–0.81, 3—0.60–0.70, 4—0.51–0.60, 5—0.44–0.52, 6—0.40–0.45, 7—0.38–0.45. Upper area between ocelli and compound eye somewhat depressed. Punctures behind eyes mostly separated, only some in upper third (just behind eye) fused. Punctures between compound eyes with glabrous interspaces narrower than puncture diameter, forming meshlike sculpture. Punctures on genae and temples less dense, with glabrous interspaces; puncture diameter on temples 0.02–0.06 mm. Postocellar area slightly raised, convex, with longitudinal median groove indistinct (holotype, 1 paratype) or missing (1 paratype), bordered by distinct parallel or slightly convergent postocellar furrows. OCL: 0.45–0.49, OOL: 0.55–0.59, POL: 0.28–0.31 mm. Length of left compound eye 0.67–0.73, height 0.96–1.05 mm. Posterior part of vertex with transverse depression bordered posteriorly with occipital carina. Occipital carina more distinct at vertex and gena level. Clypeus slightly asymmetric, with right lobe more prominent than left lobe (Fig. 3). Clypeus with indistinct transverse carina and irregular punctures, its slightly triangular emargination about 0.8× as deep as its length. Distance from lower margins of toruli to lower margin of clypeus 0.54–0.60 mm.

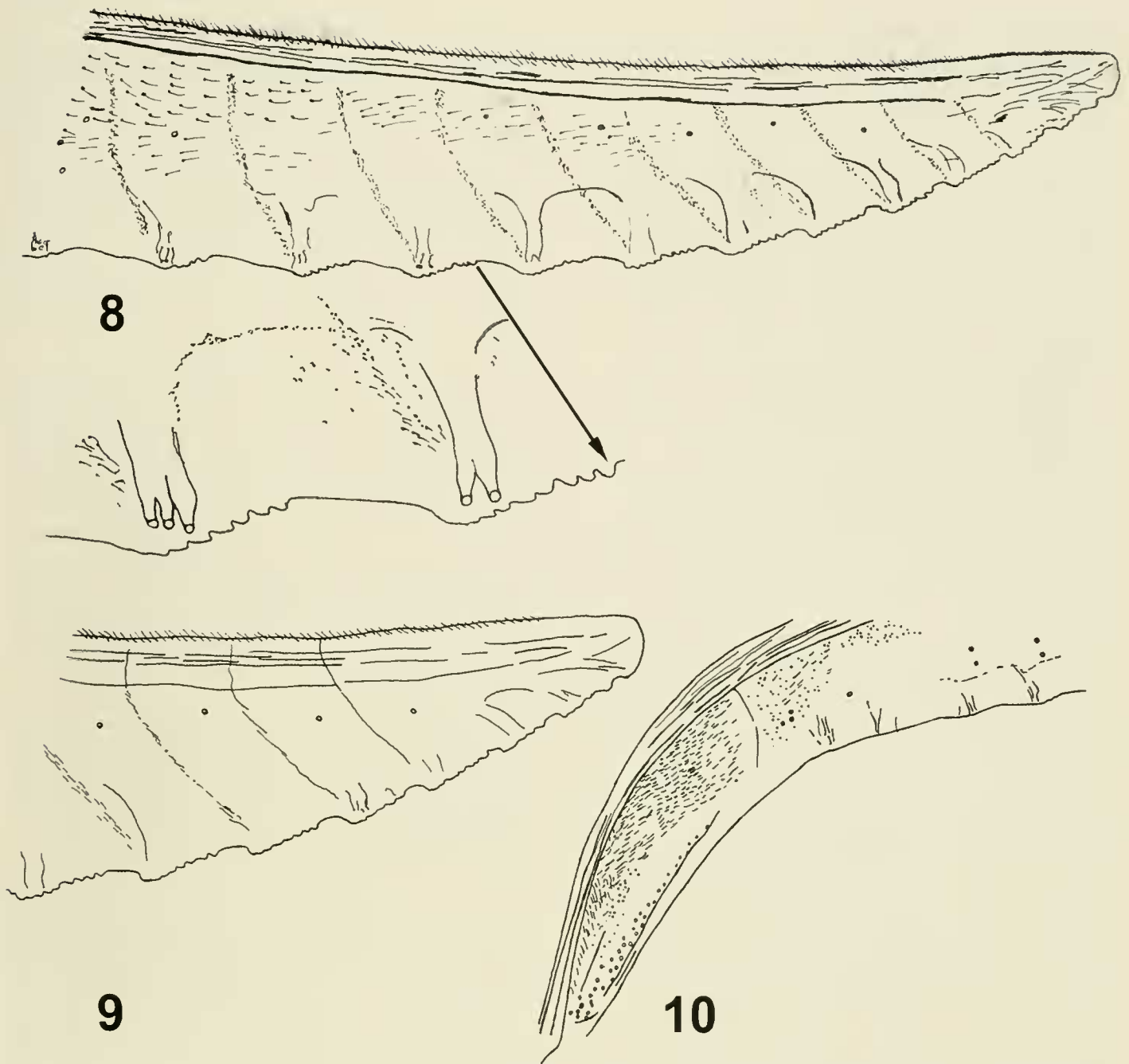
Thorax: Lateral half of median lobe with 10–14 large punctures. Middle part of median lobe laterally from median mesoscutal groove longitudinally depressed. Punctures on mesoscutum fine, more or less regular, with glabrous interspaces mostly wider than puncture diameter. Punctures on anterior

and central parts of mesoscutellum smaller and sparser than on posterior and lateral parts. Flat surface at posterior angle of median lobe glabrous or slightly alutaceous. Setae on upper part of thorax silvery to brownish, longer than those on upper head. Punctures on mesopleuron up to 0.13 mm, often polygonal, with glabrous ridges of uneven height between them (Fig. 4). Setae on mesopleuron up to 0.14 mm long. Lateral portions of pectus surface rather flat. Pectus with small and sparse punctures in middle and posterior parts, in its anterior part punctures larger (up to 0.06 mm) and denser; pectus microsculpture indistinct, scalelike. Anterior part of thorax at border of mesopleuron and pectus without punctures, but with some scalelike microsculpture. Distance between cenchri 0.50–0.59 mm. Lateral parts of mesoscutellar appendage transversely concave, meshed. Metepimeron and metepisternum with irregular rough sculpture, their shape as in Fig. 5. Outer surface of metacoxa with numerous sparse punctures, denser and larger at base than at apex; microsculpture scalelike, rather obsolete. Basal upper corner of metacoxa glabrous.

Abdomen: Terga shiny. Tergum 1 with at least some small punctures. Macrosculpture on next terga obsolete, indistinct punctures starting from tergum 5. Sculpticells on terga 1–5 scalelike, obsolete. Terga 1–4 dorsally almost without setae, more numerous and dense from tergum 5. Silvery-gray setae cover all sterna and lateral parts of all terga entirely. Brownish setae may be present on terga 8–9. Valvula 3 (apical sheath) in lateral view about as long (1.0–1.10 mm) as valvifer 2 (basal sheath), its shape as in Fig. 6. Longest setae of valvula 3 (sensory tuft) 0.29–0.33 mm, curved at apical third and forming ca. 30° angle in dorsal view (Fig. 7). Cercus 0.17–0.19 mm long. Setae on cercus and valvula 3 brownish. Valvula 1 (lancet) with 16 segments, apical half dorsally concave (Fig. 8). Annuli of middle segments outlined by stiff setalike sensilla; winglike processes of annuli absent; serru-



Figs. 2-7. *Dolerus anatolii*, holotype/paratype female. 2, Head in dorsal view (holotype). 3, Outline of clypeus (holotype). 4, Mesopleuron surface (holotype). 5, Metepimeron and metepisternum (holotype). 6, Apical part of abdomen in lateral view (paratype). 7, Valvula 3 (apical sheath) in dorsal view (holotype).



Figs. 8–10. *Dolerus anatolii*, holotype female. 8, Valvula 1 (lancet) with details of 2 serrulae. 9, Apical part of the valvula 1. 10, Basal part of the valvula 1.

lae as in Fig. 9. Apical and basal parts of valvula 1 as in Figs. 9–10. Serrulae 1–3 without teeth, the rest with approximate number of teeth as follows: 4:4; 5:5; 6:7; 7:8; 8:8; 9:10; 10:9; 11:8; 12:7; 13:9; 14:6; 15:4; 16:1 (serrulae numbered from base of valvula 1 to apex).

Male.—Unknown.

Host plant.—Unknown.

Distribution.—Eastern Asia: southern Russian Far East and South Korea.

DISCUSSION

The holotype female of the species bears a handwritten label by A. N. Zhelochovtsev

(Fig. 1.) indicating that he was planning to describe it as a new species. However, there is no indication that he noticed its resemblance to any Nearctic species. Superficially, *D. anatolii* resembles *D. pachycerus* Hartig, 1837 (= *D. taeniatus* Zaddach, 1859), of the subgenus *Juncilerus* Zhelochovtsev (= *Achaetoprion* Goulet), but it differs by the ovipositor and presence of a furrow on the metatibia. *Dolerus anatolii*, possessing the following combination of characters, does not fit any of Zhelochovtsev's subgenera: comparatively long ovipositor, valvula 1 without lateral teeth, and

the enlarged irregular punctures on the mesopleuron. Within the subgenus *Neodolerus*, *Dolerus anatolii* is closest to *D. parasericeus* MacGillivray, 1908; however, *D. anatolii* differs by the mostly separated punctures behind the compound eyes with only some in the upper third (just behind the eyes) fused, the mesoscutellar appendage transversely concave, outer surface of the metacoxa with numerous punctures, and the lamnium with 16 segments.

The host plant is known for only one *Neodolerus* species, *Dolerus sericeus* Say, which feeds on wheat and probably on other grasses (Goulet 1986, Leblanc and Goulet 1992). Until now, *Neodolerus* was considered endemic to North America. With the discovery of *D. anatolii* in the eastern Palearctic the possibility of a Palearctic origin for *Neodolerus* cannot completely be excluded. Presence of *Neodolerus* in eastern Palearctic is a sequent example reflecting the well-known relationships between the temperate fauna of eastern Asia and eastern North America. Because many scientists studying eastern Asiatic species were unaware of the eastern North American taxa, they often described new genera.

Goulet (1986) proposed that *Neodolerus* might be a lineage within his *nitens* group (*Poodolerus* Zhelochovtsev). *Poodolerus* is distributed mostly in the Palearctic (over 55 species in western Palearctic), with seven Nearctic and one Holarctic species (*D. asper* Zaddach, 1859), and one species introduced into North America (*D. nitens* Zaddach, 1859). Discussion of the phylogenetic relationships within *Poodolerus* is not within the scope of this paper, but it is noteworthy that characteristic features of *Neodolerus* occur in some species of *Poodolerus*, for example, in *D. vulneratus* Mocsáry, 1878. This species has two characters in common with *Neodolerus* species: the distinctly outlined furrow on the outer surface of the metatibia and the large flat triangular surface at the posterior angle of the median lobe (3 females were examined). *Dolerus vulneratus* is a rare Palearctic species

known from Estonia (Viitasaari et al. 1998), Russian Karelia (Lindqvist 1969), Siberia, the Russian Far East (Zhelochovtsev and Zinovjev 1996), and South Korea (Haris 2001).

On the other hand, the penis valve of *D. vulneratus* is very different (Zhelochovtsev 1988: 181, fig. 10) from all *Neodolerus* species and resembles species of the *Dolerus alpinus* and *D. affinis* groups. We did not study any material of *Dolerus shanghaiensis* Wei and Nie (the name is preoccupied by *Dolerus shanghaiensis* Haris, 1996) that according to its description and illustrations of the ovipositor and penis valve first resembled a *Neodolerus* species. However, the specimens of its type series show no furrow on the outer surface of the metatibia (Meicai Wei, personal communication). This species most probably belongs to the subgenus *Poodolerus*.

Further study incorporating molecular methods may shed more light on the phylogenetic relationships between the *Neodolerus* and allied *Poodolerus* species.

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